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COMMUNICATION SYSTEM CAPABLE OF REDUCING

COMMUNICATION LOAD

RECEIVED

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Background of the Invention

Technology Center 2600

5. 1. Field of the Invention

The present invention relates to a communication system using a radio apparatus. More particularly, the present invention relates to a communication system that can reduce a communication load on an information provider providing of various contents or data.

2. Description of the Related Art

Recently, various radio apparatuses such as a portable telephone are widely used not only in a call for calls but also in for various other communications. The various such communications include, for example, a download of various data such as music data and the like from a predetermined home page by using the Internet, reception of e-mail, and upload of picture data, such as a photograph took taken by himself a user and the like, to a home page of a dealer in order to produce a photograph album.

As An example of such a communication system, for example, is the Japanese Laid Open Patent Application (JPA 2000-90039) that discloses "Music Distributing Method, Transmitting Apparatus And Method,

And Reproducing Apparatus And Method". In this communication system, a music server and a client are connected to ~~an~~the Internet. The client prepares a 30 public key and a secret key based on an ID ~~peculiar~~unique to the reproducing apparatus. The public key is sent to and registered in ~~the~~a server, and the secret key is stored in the reproducing apparatus. The client requests the server to distribute music 35 data. The encryption based on the registered public key is performed on the music data fetched from a music database (DB). The encrypted music data is sent to the client, and stored in the reproducing apparatus. At a time of a reproduction, the music data is decoded 40 and reproduced in accordance with the secret key stored in the reproducing apparatus. The music data stored in the reproducing apparatus is encrypted in accordance with the key prepared on the basis of the ID ~~peculiar~~unique to the reproducing apparatus. Thus, 45 the other reproducing apparatuses ~~can~~not~~cannot~~ reproduce the music data. This configuration enables a system for distributing music data to sufficiently consider the protection of protect the copyright of the music data to be distributed.

50 Also, Japanese Laid Open Patent Application (JP-A-Heisei, 10-150460) discloses "Radio Picture Communication System". In this radio picture

communication system, a video server opens various picture information stored therein as a common file onto a network. A terminal station sends a title of picture information, which it desires to receive, as control information to a radio control station by using a second radio communication path. The control radio station sends the title of the picture information included in the control information received from the terminal station, to a radio picture station, and then instructs to send this picture information to the terminal station. In response to this instruction, the radio picture station reads out the picture information corresponding to the instruction from the common file, and then sends the picture information to the terminal station by using the first radio communication path. Thus, the radio picture terminal can comfortably conveniently receive the high quality picture information with a high quality.

Moreover, Japanese Patent No. 2924865 discloses "Voice Mail System". In this voice mail system, a server and one or more terminals are connected through a communication medium to each other. The serer manages a memory for storing a plurality of voice mail data as an identifiable file in a memory area assigned for each terminal. The server is provided with

transmitting means and memory control means. The
80 transmitting means, when receiving a mail request
through the communication medium from the terminal,
reads out the voice mail data from the memory area of
the memory assigned to a terminal of its transmission
source, and transmits to the terminal of the
85 transmission source. The memory control means, when
receiving a mail edition signal, ~~again accumulates by~~
~~inserting or adding~~ insert or add the voice mail data
in the mail edition signal to a position specified by
the mail edition signal, in the memory area of the
90 memory assigned to the terminal of the transmission
source. This configuration ~~enables the~~ allows for
extremely effective communication in a communication
network which ~~characterized by high costs and~~
~~transmission speed speeds is~~ slower than that of a
95 wire line, ~~and cost is expensive~~, because the same
voice mail data is not transmitted and received
between the server and the same terminals ~~in many~~
multiple times.

Fig. 1 shows an example of the conventional
100 communication system disclosed in Japanese Laid Open
Patent Application (JPA 2000-90039), in which a
portable telephone is used as a radio apparatus. In
this communication system, a portable telephone 101
wirelessly communicates with a base station 102. The

105 base station 102 is connected to a portable telephone network 103, and the portable telephone network 103 is connected to ~~an~~the Internet 104. A content server 105 for providing various contents is connected to the Internet 104. The portable telephone 101 can access 110 ~~to~~ the desirable content from server 105 through the portable telephone network 103 and the Internet 104. For the purpose of easy explanation, Fig. 1 shows one portable telephone 101, one base station 102 and one content server 105, ~~respectively~~.

115 In this communication system, let us suppose that the content server 105 is ~~the music downloading exclusive-a server for providing that exclusively provides~~ a service of downloading music data. When a new song of a popular singer or the like is sold or a 120 hit song is produced, a large number of portable telephones 101 ~~intensively~~ access ~~to~~ the content server 105 dedicated to the music downloading operation. The content server 105 establishes a link to each of the ~~accessed~~ portable telephones 101 accessing the server, and distributes the music data requested by each of them. Thus, if the accesses are concentrated on the particular content server 105, ~~a~~ the data distribution amount rate per hour ~~to~~ for each portable telephone 101 from the content server 105 125 becomes very small. As a result, the time it takes 130

for each portable telephone 101 to download the music data becomes long. Hence, this results in a problem high that a communication costs is expensive.

Conventionally, To solve the above problem,
135 conventionally, such a structure is employed that is solved by employing a structure of several servers are prepared on the side of alongside the content servers server 105 in order to disperse distribute the load. This Such structure causes the facility cost on the side of the content servers server 105 to be increased. Such a measure may be effective for the a content server 105 having a high access frequency. However, if the in the server on which the accesses are transiently are temporarily concentrated on a server, such a the fact that the size of the facility is increased correspondingly to the depends on the access peak is creates a problem from the viewpoint of the effective usage related to efficient use of the communication system. Thus, the problem that the 150 downloading of the data in the case of the load concentration requires requiring the abnormally long time is not still not solved in many content servers.

As mentioned above, the music distribution has been described as the an example. However, there may 155 be a case that an overload is transiently temporarily induced on the server side when electronic mails are

collectively distributed to the side of the portable telephones, or when personal information is distributed to the portable telephones under a 160 predetermined condition. This results in ~~the-a~~ similar problem. ~~The similar problem is,~~ induced even when the uploading operations are ~~transiently~~ ~~temporarily~~ concentrated.

165

Summary of the Invention

Therefore, an object of the present invention is to provide a communication system which can avoid an occurrence of an overload condition even if accesses for communications ~~communication~~ are ~~transiently~~ 170 ~~temporarily~~ concentrated on a particular apparatus such as a server and the like.

In order to attain the above-mentioned ~~object~~objective, a communication system according to the first aspect of the present invention includes a 175 network, a distribution ~~server-center~~ and a client terminal.

The distribution ~~server-center~~ is composed comprised of a distribution server containing any number of first folders to which files read from a 180 content server connected to said network, an actuation timing setting section for setting actuation ~~timings~~ ~~time~~ to process the files stored in the first folders,

a file read section for reading out the corresponding
file at the arrival of the actuation timing set by the
185 actuation timing setting section and a radio
transmitter for wirelessly transmitting the file read
by the file read section.

The client terminal is composed of any number of
second folders which are correlated to at least a part
190 of the first folders in a one-to-one relationship, a
radio receiver for wirelessly receiving the file
transmitted by the radio transmitter and a storing
section for storing the file received by the radio
receiver in the second folder corresponding to the
195 first folder.

That is, in the first aspect of the present
invention, the distribution server and client terminal
have any number of folders in which at least parts
thereof are correlated to each other in the one-to-one
200 relationship. The distribution server stores a file
read from a content server in the first folder. The
actuation timing setting section sets an actuation
timing to process the file stored in the first folder.
The file read section reads the corresponding file at
205 the arrival of the actuation timing set by the
actuation timing setting section. The radio
transmitter wirelessly transmits the read file to the
client terminal. In the client terminal, the radio

receiver receives the file transmitted by the radio
210 transmitter. The received file is stored in the second folder corresponding to the first folder.

Thus, for example, if the downloading of a predetermined file ~~are is~~ requested by ~~a number of the~~ ~~more than one~~ client terminal~~s~~, and a long time is required in order ~~to~~ ~~for the~~ transfer ~~of~~ the file to those client terminals, the content server ~~to~~ ~~from~~ which the downloading of the file is requested stores the file in the first folder of the distribution server. Since the distribution server has the folder correlated to the client terminal, the distribution server can wirelessly transmit the requested file, in ~~such a condition a way~~ that the loads are dispersed by setting the actuation timings.

Such a ~~constitution that the configuration~~ ~~including a~~ distribution server ~~is mediated enables as~~ a mediator between the portable information terminal and the content server, on which the accesses from the clients are ~~transiently temporarily~~ concentrated, to disperse the loads for the transfers of the files ~~allows for spreading of the transfer load~~. Also, ~~it~~ ~~It is effective also efficient~~ to install a cache memory in the distribution server.

In the first aspect of the present invention, the actuation timing setting section may set a

235 periodic interval as the actuation timing. If the transfer of the file is not ~~in a great hurry~~urgent, the processes on the distribution server can be dispersed by properly setting the periodic interval.

In the first aspect of the present invention,
240 the actuation timing setting section may be used to set a time as the actuation timingtime. According to this ~~constitution~~configuration, a ~~technique for using~~
~~nighttime~~—in a case of a file transfer having no ~~emergency~~that is not urgent, ~~nighttime~~—can be used to
245 thereby ~~make lower~~ a communication fee ~~cheaper~~ and also attain the ~~effecientive~~ usage of the distribution server.

In the first aspect of the present invention,
the actuation timing setting section may be actuated
250 when a new file is stored in the first folder, and the corresponding file stored in the first folder is removed after the new file is transferred to the second folder through the radio transmitter and the radio receiver and is stored therein.

255 This shows the exemplifies a case in which the transmission is done at real time when the file is stored. As for the transfer of the ~~emergent~~an urgent file, this ~~constitution~~enables an emergent configuration also allows for an urgent distribution
260 of the file. Of course, if the distribution server is

responsible for the distributions of the files from the various servers and the like, the transfer timings themselves of the emergent urgent files can be dispersed entirely and temporally. Thus, there is
265 little fear that the loads are concentrated on-within a particular time frame.

A communication system according to a second aspect of the present invention is composed a network, a distribution server which is connected to the network and has a first folder, a mobile terminal which is connected to the network and has a second folder correlated with the first folder, and a position detector which detects a current position of the mobile terminal. The distribution server includes
270 a file transmitting section that wirelessly transmits a file stored in advance in the first folder to the second folder when the position detector detects that the current position of the mobile terminal is a predetermined position.

280 According to this communication system, the mechanism in which a necessary file is transferred from the distribution server to the mobile terminal, with positional information as a trigger, is effective
~~for a~~ as an area guide of a land and the like, such as
285 a case when a user of the mobile terminal visits an unfamiliar landplace.

In the second aspect of the present invention, the file transmitted by the file transmitting section is the file for storing information of a predetermined territory, and the mobile terminal has an information display for displaying the information of the territory when receiving this file.

That is, the mobile terminal has the information display for displaying information, such as a display, a speaker or the like, and the file for storing the information of the predetermined territory is sent and displayed by the display.

A communication system according to a third aspect of the present invention is composed of a network, a mobile terminal which has a first folder and a first communication unit for carrying out a radio communication, a distribution server which is connected to the network and has a memory region correlated to the first folder and a second communication unit for carrying out a radio communication and a file transferring unit which, when a file is stored in the memory region of the distribution server, transfers the file to a particular memory region which is connected through the network to the distribution server.

According to this communication system, if the uploading operations of the files from the mobile

terminals are concentrated on the predetermined regions among the several particular memory regions,
315 the distribution server is placed between them. Then, the mobile terminal stores the file in the individual memory region corresponding to each of the mobile terminals within the distribution server. Thus, the concentration of the loads is avoided. Hence, this
320 has a merit that the mobile terminal can transmit and receive the file without directly recognizing the location of the particular memory region.

Brief Description of the Drawings

325 Fig. 1 is a system configuration view showing an example of a conventional communication system in which a portable telephone is used as a radio unit;

Fig. 2 is a system configuration view showing a schematic configuration of a communication system in a
330 first embodiment of the present invention;

Fig. 3 is a block diagram showing a the main configuration of a portable information terminal used in the first embodiment;

Fig. 4 is a plan view of a display showing an
335 example of a menu screen when a user accesses to a portal site, in the first embodiment;

Fig. 5 is a plan view of a display showing an example of a menu screen for a music distribution when

a user selects a button "Music Distribution" in the
340 first embodiment;

Fig. 6 is a plan view of a display when a user
selects an item "Minimum Fee" in the first embodiment;

Fig. 7 is an explanation view showing an example
of a folder used in the first embodiment;

345 Fig. 8 is an explanation view showing a flow of
~~a process~~ processes among a music server, a
distribution server and a portable information
terminal when the distribution server transmits music
data to the portable information terminal, in the
350 first embodiment;

Fig. 9 is a plan view showing a condition when a
portable information terminal displays ~~displays~~ displaying a
mail setting screen of a distribution server, ~~in order~~
~~to set a~~ for the purpose of setting distribution of a
355 ~~an electronic~~ mail, in the first embodiment;

Fig. 10 is a flowchart showing a ~~the~~ process
~~when of~~ a distribution server ~~accesses to~~ accessing a
mail server and ~~stores a~~ ~~storing~~ mail in a
corresponding folder, in the first embodiment;

360 Fig. 11 is a flowchart showing a ~~flow in a~~
~~distributing the flow of an electronic mail~~
~~distribution process of an electronic mail~~ in a
distribution server, in the first embodiment;

Fig. 12 is a flowchart showing a ~~the~~ flow of a

365 typical process ~~of~~in a distribution server, in the
first embodiment;

Fig. 13 is a system configuration view showing a schematic configuration of a communication system in a second embodiment;

370 Fig. 14 is a plan view of a display showing an example of a setting menu of a territory guide service, in the second embodiment; and

Fig. 15 is a system configuration view showing a schematic configuration of a communication system in a 375 third embodiment of the present invention.

Description of the Preferred Embodiments

The present invention will be described below in detail with reference to the following embodiments.

380 (First Embodiment)

Fig. 2 shows the schematic configuration of a communication system in a first embodiment of the present invention. In this communication system, a portable information terminal 201 represented by a 385 portable telephone or a portable computer having a communication function is connected through a radio base station or a circuit device (not shown), such as a modem (a modulation demodulation device), a router and the like, to ~~an~~the Internet 204. A music server 205 for storing a content of music and a mail server

206 for storing a-mail are connected to the Internet
204, as an example of a content server for providing
various contents. Also, a distribution center 200
includes a distribution server 207 for distributing
395 the data of these the content servers 205, 206 and a
predetermined content server 208 used for accumulating
a home page as a portal site. The content servers 205
and 206, and the predetermined content server 208 are
also connected to the Internet 204. The distribution
400 server center 207-200 also contains a distribution
data store memory 209 for transiently storing the data
for a-distribution and a radio unit 210 for wirelessly
distributing the data to the portable information
terminal 201. A private cable 211 is connectsed
405 between the music server 205 and the distribution
server 207 and a private cable 212 is connectsed
between —the mail server 206 and the distribution
server 207.

Fig. 3 is a block diagram showing athe main
410 configuration of the portable information terminal
used in the first embodiment. The portable
information terminal 201 is composed of a CPU (Central
Processing Unit) 221, ROM 223, RAM 224, a display
control circuit 225, a display 226, a
415 transmission/reception circuit 227, an antenna 228, an
operation control circuit 229, an operation unit 231,

a voice circuit 232, a microphone 233, a speaker 234 and a bus 222.

The CPU 221 is connected through the bus 222,
420 such as a data bus, an address bus, a control bus and the like, to respective sections within the portable information terminal. The ROM 223 is a read only memory for storing a program to carry out various controls of the portable information terminal 201 and
425 other fixed data. The RAM 224 is a memory for work.

~~A part the~~ The RAM 224 constitutes a detachable memory medium. If ~~as the a~~ a detachable memory medium, a medium having a relatively large capacity is assembled in the portable information terminal 201, a large
430 amount of downloaded music data and the like can be stored in the medium.

The display control circuit 225 is used to display visual data on the display 226, such as a liquid crystal or the like, assembled in the portable information terminal 201. The transmission/reception circuit 227 is used when data is transmitted and received through an antenna 228. The operation control circuit 229 is used to input operation data from the operation unit 231 having a plurality of
440 button switches (not shown) and ~~carry out a control for putting on or off~~ turning those button switches on or off. The voice circuit 232 is used for controlling

an input/output of a voice, and it is connected to the microphone 233 and the speaker 234.

445 It should be noted that the music server 205, the mail server 206 and the content server 208 which are shown in Fig. 2 have the configurations basically equal to those of ~~the-a~~ typical computer. Thus, those explanations are omitted. The distribution server 207
450 also has ~~the similar~~ configuration ~~substantially equal~~ to them. However, it is structurally different in the ~~structure-in~~ that it has the distribution data store memory 209 and the radio unit 210 wirelessly and automatically connected to the portable information
455 terminal 201 in order to carry out a communication.

<Downloading of Music Data>

At first, a case in which a user of the portable information terminal 201 shown in Fig. 2 downloads music data ~~in-utilizing the~~ above communication system
460 is described as an example. In this case, the user of the portable information terminal 201 initially accesses ~~to-a~~ predetermined portal site on the Internet 204.

Fig. 4 shows an example of a menu screen when
465 the user accesses ~~to-the~~ portal site. The menu screen customized for each user of the portable information terminal 201 is displayed on the display 226. In this example, a news button 241 for selecting a ~~site-of-a~~

news site, a mail button 242 for setting a mail
470 distribution ~~of a mail~~ and a music distribution button
243 for accessing ~~to~~ a home page to ~~carry out a~~
~~distribution of a~~ distribute music are placed on the
screen.

In the this case of this example, it is supposed
475 that the user of the portable information terminal 201
selects the music distribution button 243. When the
music distribution button 243 is selected, the CPU 221
(Fig. 3) controls the access to the music server 205
shown in Fig. 2, in accordance with a URL (Uniform
480 Resource Locator) prepared in advance. Thereby, a
menu screen of its home page is displayed on the
display 226.

Fig. 5 shows an example of a menu screen for a
music distribution when the user selects a button
485 "Music Distribution". The menu screen is designed
that a predetermined number of songs whose
distributions are desired are displayed on the display
226. So, the user selects ~~the~~ a desirable song from
the displayed songs by using a radio button. If the
490 desirable song is absent not displayed, the user can
select a next button 251 or a previous button 252 to
~~indicate next song names or previous~~ locate other song
names.

The This menu screen allows the user to also

495 ~~selects~~ select a manner of distributing music ~~on this~~
~~menu screen~~. If the user selects an item
"Immediately", although a downloading fee is
comparatively expensive, the distribution is
immediately started. If the user selects an item
500 "Minimum Fee", instead of the comparatively cheap
downloading fee, the distribution is carried out in a
time band in which the downloading work is relatively
empty. In the system shown in Fig. 2, although the
distribution server 207 has the radio unit 210, there
505 may be a case that another radio unit or another radio
facility is used to send the data to the portable
information terminal 201. In the latter case, ~~there~~
~~may be a case that the data is~~ may be sent through a
line up to the radio unit or the radio facility. So,
510 ~~in~~ In such a ~~case~~ instances, it ~~may be considered to~~
~~send the data~~ may be sent in a time band frame in
which the line is not busy or in the nighttime ~~in~~
~~which a~~ when the usage fee of the line is ~~cheap~~ low,
and thus, try to ~~save a~~ lower ~~the~~ communication cost.
515 Thus, if the user selects the item "Minimum Fee", it
takes a period of a half day or a day for the user to
receive the distributed desirable music.

It should be noted that ~~not only such a fee~~
~~system composed of the fee system is not limited to~~
520 ~~two stages options~~, but may also another fee system of

employ three stages—or more may be employedoptions, depending on the music server 205. For example, a fee system of three stagesoptions such as "Immediately", "Within Five Hours" and "Within One Day" may be 525 employed. When the user of the portable information terminal 201 selects a—music and a distributing manner on the menu screen shown in Fig. 5 and then the data according to the selection is sent to the music server 205, data to confirm the user is sent from the music 530 server 205 or the distribution server 207 to the portable information terminal 201, and a confirmation screen is displayed. Since the distribution of music is usually chargedfor a fee, an input of a password is required. Thus, it is possible to protect the other 535 personspreventothers from illegally requesting the downloading.

e Fig. 6 shows a display an example of the a user confirmation display when the user selects the item "Minimum Fee", as an example of a screen for the sake 540 of a user confirmation. When the user selects the item "Minimum Fee", the music server 205 entrusts the distribution server 207 with the distribution of the music. The distribution server 207 determines a time at which the music may be distributed at the cheapest 545 lowest fee, and returns the time back to the portable information terminal 201 as time data for an aim of

the expected distribution time, and it is displayed on the display 226.

On the other hand, if the user of the portable information terminal 201 selects the item "Immediately" from the display content of Fig. 5, the music server 205 sends information of this selection to the distribution server 207 and instructs the immediate execution of the distribution. At this time, 555 the password is also requested for the sake of the user confirmation.—

The first embodiment employs the manner of entrusting the distribution server 207 with all the distributions. However, it is not always limited to 560 this manner. For example, only in the case of the selection of the item "Immediately", the music server 205 can immediately execute the distribution by using a route connected through the Internet without any intervention of the distribution server 207. It is 565 imagined that ~~a rate of persons~~ the number of people who select the item "Immediately" is relatively low because of the fee. Thus, even if the music server 205 performs the direct distribution ~~on-to~~ those ~~persons~~people, the ~~conventional~~ occurrence of the 570 overload caused by the concentration of the downloading operations is not easily induced. On the contrary, when the music server 205 entrusts the

distribution server 207 with the collective distribution, it is possible to simplify the process 575 of the distribution, the process for charging the fee and the process for solving the trouble associated with the downloading operation and the like.

The portable information terminal 201 and the distribution server 207 in the first embodiment have 580 the radio units, respectively. So, they can be automatically connected to each other, and the data can be sent and received between them. The portable information terminal 201 and the distribution server 207 have a folder all or a part of which ~~have-has~~ the 585 ~~same-identical~~ directory ~~structure-structures~~, in order to manage the operation ~~for-of~~ sending and receiving the data.

Fig. 7 shows an example of a list of folders used in the first embodiment. The list contains 590 information to identify an attribute of a communication condition of a registered file ~~every~~. Every folder ~~constituting-constitutes~~ a directory. ~~This-By default, this~~ information (hereafter, referred to as a communication condition file) occupies a part 595 of the folders constituting the directory ~~as-default~~. Also, the list contains information to identify the registered files every folder constituting the directory. ~~This-By default, this~~ information

(hereafter referred to as an ID file) occupies a part
600 of the folders constituting the directory ~~as default~~.

A folder "A" and a folder "B" are designed such
that the portable information terminal 201 and the
distribution server 207 shown in Fig. 2 check a
content of the folder "A" and "B" for each hour
605 indicated by "Condition", and the names of the files
are "F₁" and "F₂". Here, a functional attribute
"Synchronization" implies that the portable
information terminal 201 and the distribution server
207 are respectively equipped the have folders which
610 contents with the same content are same each other. If
the files registered in the folders ~~of~~ with the same
name are different between the portable information
terminal 201 and the distribution server 207, the
~~insufficient~~ missing file is copied ~~each other~~ to the
615 Portable Information Terminal or the distribution
server through the radio communication between them.
Also, if a file is removed ~~on one side~~ in either one of
them, the same file as the removed file is removed ~~on~~
~~the other side~~ from the other. The first embodiment
620 employs a protocol involving a transmission
confirmation control so that the above-mentioned copy
or removal can be perfectly executed.

A folder "C" is designed ~~such~~ so that an
actuation attribute is set ~~at~~ to "Real Time", namely,

625 when a file is added or removed, ~~they have the file~~
~~contents equal to each other~~it is added or removed
from both the Portable Information Terminal and the
distribution server. Its file name is "F₃". That is,
if the actuation attribute is "Real Time", ~~for example,~~
630 if, for example, at the time the distribution server
207 adds a file, a radio communication is immediately
done ~~at that point~~executed. So, ~~its~~the same file is
added to the portable information terminal 201. If a
file is removed from one side, ~~its~~the same file is
635 also removed from the other side.

In a folder "D", ~~its~~the actuation attribute is
"Manual", and ~~its~~the function attribute is
"Synchronization". Thus, ~~it is manually set that they~~
~~have the file contents equal to each other~~the content
640 of the corresponding files in the Portable Information
Terminal and the distribution server are manually
synchronized. ~~Its~~T~~the~~ file name is "F₄". In a the
case of "Manual" actuation attribute, a metaphor is
equipped to report to the user the presence of target
645 information synchronizing. The target information is
synchronized in accordance with by using an ID file by
which can be identified by a file registered in a
folder assigned to it can be identified. The user,
when needing a body of the file, specifies the
650 metaphor and carries out a communication actuation.

In a folder "E", its the function attribute is "Transfer". An actuation time for a transfer is set at "3:25" as a "Condition". Its The file name is "F₅". In a the case of "Transfer", there is a directionality 655 of a communication. That is, if a file registered in this folder is not present on a partner side between the portable information terminal 201 and the distribution server 207, its file is transmitted via a radio communication to the partner side. When the 660 transmission is completed, the file of the transmission source is erased.

It should be noted that "Period", "Real (Real Time)", "Manual" and "Time Specification" as the actuation attributes in the list of the folders shown 665 in Fig. 7 are merely the examples. For example, "position" can be used as the actuation attribute. This will be explained later. So, when the portable information terminal 201 enters into a particular position (area), it is actuated. Then, a particular 670 file is copied, transferred or removed.

Fig. 8 shows a flow chart of a process among the music server, the distribution server and the portable information terminal when the distribution server transmits music data to the portable information 675 terminal. The portable information terminal 201, when When the music distribution button 243 is pushed at

the portal site shown in Fig. 4, the portable information terminal 201 specifies a URL of the music server 205 shown in Fig. 2 (Step S301). ~~The music server 205, if~~ If there is an access through the Internet 204, the music server 205 transmits data through the Internet 204 to the portable information terminal 201 (Step S302) to indicate an order entry screen as the one shown in Fig. 5, ~~through the~~ Internet 204 to the ~~portable information terminal 201~~ (Step S302). ~~The~~ In response to the transmission (Step S303), the portable information terminal 201 specifies a selection of a song and a distribution manner ~~in response to this transmission~~ (Step S303).

Upon receiving this specification, the music server 205, when receiving this specification, invokes an external program from an HTML program by using a CGI (Common Gateway Interface), and transmits an instruction to switch the URL to the distribution server 207 (Fig. 2) and a reception number to the portable information terminal 201 (Step S304). After that, the portable information terminal 201 sends and receives the data to and from the distribution server 207. Specifically, the portable information terminal 201 sends the ~~sent~~ received URL of the distribution server 207, the reception number and a song name targeted for the downloading operation to the

distribution server 207 (Step S305). It should be noted that, which server is used as the distribution 705 server 207 by the music server 205 is determined in advance between ~~both the two~~ of them.

The distribution server 207, when receiving the reception number, sends a password request screen shown in Fig. 6, in order to confirm the user using 710 the portable information terminal 201 (Step S306).

The password inputted by the user is transferred to the distribution server 207 (Step S307). ~~The If the inputted password is correct, the distribution server 207, if the inputted password is correct,~~ specifies 715 the URL of the music server 205. If the reception number and the song name to download the music data and its song data are stored in a cache memory formed in the distribution data store memory 209, ~~its the existing~~ version is sent to the music server 205 (Step 720 S308). ~~If the requested music data stored in the distribution data store memory 209 is reported in in response to the reception of the received reception number, the music server 205, if the fact that the requested music data is stored in the distribution 725 data store memory 209 is reported,~~ compares its version with a version of music data stored in the self-server. Then, if the versions are ~~equal to each other~~ identical, the music server sends a message to

the distribution server 207 indicating that the music
730 data need not does not need to be sent, to the
distribution server 207. If the versions are
different from each other, or if the requested music
data is not present on the distribution server 207,
the music server sends the music data itself to the
735 distribution server 207 (Step S309).

If the music data is sent from the music server
205, the distribution server 207, if the music
data itself is sent from the music server 205, stores
it in the distribution data store memory 209 so as to
740 cope with in order to fulfill the similarly
downloading request, and also stores it in the folder
E shown in Fig. 7 (Step S310). In this case, if music
data of the latest newest version is sent since a the
version in the distribution data store memory is
745 different, the distribution server 207 overwrites the
music data of the newest latest version on the music
data of the old version stored in the distribution
data store memory 209, and updates a the management
number of the version to the newest number. If a
750 message indicating that a transmission is not required
since the music data of the newest latest version is
stored in the distribution data store memory 209 is
sent from the music server 205, the distribution
server 207 reads out the corresponding music data from

755 the distribution data store memory 209, and stores it in ~~the~~-folder E (Step S310).

The distribution server 207, which stores the music data in ~~the~~-folder E, sets a distribution time (Step S311). If the item "Immediately" is specified 760 on the portable information terminal 201, ~~a current time or a time slightly elapsing from the current time~~ the time of the specification or a time slightly removed from it is specified as the actuation attribute. On the other hand, if the item "Minimum 765 Fee" is specifiedselected, when the process on the distribution server 207 uses an empty line, the time set at Fig. 6 as the time band at which the communication fee is cheap-low is specified as a specification time. After that, the distribution 770 server 207 checks whether or not the specification time arriveshas arrived, on the basis of a predetermined periodic interval (Step S312). When the specification time is arrivedarrives (YES), the distribution server 207 distributes the corresponding 775 music data to the portable information terminal 201 (Step S313).

It should be noted that, in the case of distributing the music data to the portable information terminal 201, an identification number is 780 required in order to specify the portable information

terminal 201. This identification number may be registered on the portal site customized for the user ef-as in Fig. 4, or may be registered when an access is done to a the home page on-of the music server 205 shown in Fig. 5 is obtained. The first embodiment is explained under the assumption that the distribution server 207 has the unique radio unit 210. However, when the portable information terminal 201 is a portable telephone, the music data can be distributed by using a neighboring base station as the radio unit 210. In this case, the distribution server 207 may distribute the music data by using the telephone number of the portable information terminal 201. Also, if the telephone number is sent to the music server 205 or the distribution server 207 from the portable information terminal 201 together with the data of the reception number and the like and stored correspondingly to the reception number, it can be used in distributing the music data.

800 <Distribution of Mail>

An example in which of a distribution server 207 ~~distributes a~~ distributing mail received by the mail server 206 shown in Fig. 2 will be described below. Let us suppose that the mail server 206 has a function as a POP (Post Office Protocol) server for receiving 805 and holding a-mail from a portable information

terminal 201. If it is assumed that the mail server 206, ~~each time receiving~~ receives one mail destined to a user of a portable information terminal 201, sends 810 it to the corresponding portable information terminal 201, there may be many cases that when a time longer than ~~a—the~~ communication time of the content of the mail is spent on a procedure necessary for a—
establishing connection ~~of—to~~ the portable information 815 terminal 201. Thus, this is not economical~~cost-efficient~~. Also, if the user has a plurality of mail addresses, the economical~~economic~~ efficiency is damaged by the fact that lowered since the respective mail servers 206 send the independently received mails 820 to the portable information terminal 201. So, in the first embodiment, the distribution server 207 collectively manages and distributes the mails from the users of the portable information terminals 201 to thereby drop-lower the communication cost.

825 Fig. 9 shows the condition when a portable information terminal displays a mail setting screen of a distribution server, ~~in order used~~ to set ~~a—the~~ distribution of a-mail. In order to display the mail setting screen shown in Fig. 9, as described in the 830 above-mentioned example, it is enough to access ~~to—the~~ portal site sown in Fig. 4, ~~and~~ display its menu screen, and then push the mail button 242. Thus, it

is possible to access to—the distribution server 207
and then display its mail setting screen. Of course,
835 the mail setting screen can be displayed by directly
inputting the URL of the distribution server 207 and
using a ~~the~~ predetermined procedure.

On the mail setting screen displayed on the—
display 226, the user can set "Mail Server Patrol
840 Time", "Usual Communication Time Interval" and
"Emergent Communication Filter". "Mail Server Patrol
Time" ~~implies—specifies~~ a time interval ~~when—in which~~
the distribution server 207 patrols the respective
mail servers 206 in relation to the mail addresses of
845 the user. If this interval is long, it is difficult
to cope with an ~~emergent—urgent~~ mail. "Usual
Communication Time Interval" implies a time interval,
in which when mails are received and obtained by any
of the mail servers 206—and they are obtained, they
850 are collectively sent to the portable information
terminal 201 by radio. "Emergent Communication
Filter" implies a filter to immediately distribute the
~~coincident~~ mail received from an address used to
identify as—an emergent—urgent communication.

855 Fig. 10 shows the flow of the process that
enables the control of the above-mentioned
distribution server. For each arrival of a patrol
time (Step S331: YES), the distribution server 207

accesses to a predetermined mail server 206 (Step S332). If ~~mails are~~ mail has been received (Step S333: YES), ~~one of them~~ it is fetched, and it is judged whether or not a transmission source agrees with a mail address set as "Emergent Communication Filter" (Step S334). If it agrees (YES), this mail is stored in ~~the~~ folder C (real time actuation) shown in Fig. 7 (Step S335). The mail received from the other transmission source ~~has no emergency~~ is not urgent. Thus, such a mail is stored in ~~the~~ folder B (for each hour) (Step S336).

If the above-mentioned division is carried out, ~~it is~~ mail server 206 (Step S337) ~~judged looks~~ whether or not another mail is received by ~~its mail server 206~~ (Step S337). If it is ~~judged found~~ that ~~the other~~ mail is received (YES), ~~the processes on and after the~~ steps S337-S334-S337 are performed on them. If all the ~~mails are~~ mail is processed as mentioned in the above-mentioned manner (Step S337: NO), the process is returned back to the original state (Return). In a case that the mail is not received at ~~the~~ step S333, ~~the~~ a similar process is carried out.

It should be noted that the above-mentioned process uses the emergent communication filter and determines the distribution interval between the ~~mails~~ mail deliveries. However, depending on the

885 electronic mails, the emergent degrees of urgency can be set, one by one. With regard to such ~~mails~~mail, the emergent degree of urgency is checked at a processing step corresponding to the step S334. The mail having a high emergency urgency may be stored in 890 the folder C, and the mails except it other mail may be stored in the folder B.

Fig. 11 shows the flow in the distributing process of the electronic mail in the distribution server. The distribution server 207 checks a folder C 895 for the presence or absence of a mail file ~~of a mail~~ to be sent ~~to~~ in ~~the~~ folder C (Step S351). In a case ~~of the presence~~ there is a mail file (YES), its mail content is immediately sent to a user of a portable information terminal 201 ~~of a partner~~ by radio (Step 900 S352). In a case ~~of the absence~~ of the file ~~of the~~ mail to be sent ~~to~~ in ~~the~~ folder C If there is no mail in folder C to be sent, it is checked whether or not a certain period (here, one hour) elapses has elapsed (Step S353). If it does has not elapse elapsed (NO), 905 the operational flow returns back to the step S351 and enters in a wait state.

If it is judged at the step S353 that the-a certain period elapses has elapsed (YES), a presence or absence of a mail file ~~of a mail~~ to be sent to in 910 the folder B is checked (Step S354). In a case ~~of the~~

absence of the corresponding mail If there is no mail file (NO), ~~a—the~~ period is reset (Step S355), and the operational flow again returns back to the process at ~~the of~~ step S351 (Return). ~~In a case of the presence~~ 915 ~~of the file of the~~ If a mail file to be sent to ~~in the~~ folder B is present at the step S354 (YES), the mail file ~~of the mail~~ is sent to a user of a portable information terminal 201 ~~of a partner~~ by radio (Step S356). After that, the operational flow proceeds to 920 ~~the~~ step S355, and ~~a—the~~ period is reset.

It should be noted that, Fig. 11 illustrates the distributions with regard to ~~the~~ folders B, C. However, if the distribution server 207 is responsible for the distribution of the electronic mail as well as 925 the other various data such as music data and the like, it is possible to distribute them in ~~a condition that~~ ~~they are~~ an integrated into one element manner. In this chase, while the various folders shown in Fig. 7 are checked, the corresponding file is sent 930 automatically or manually.

Fig. 12 shows the flow of a typical process of the distribution server. If a—the patrol time is—has arrived (Step S371: YES), the distribution server 207 confirms the actuation attribute illustrated in Fig. 7 935 (Step S372). If the file is present in ~~the~~ folder C (Step S373: YES), the distribution server 207

distributes the file (Step S374). Next, it is checked whether or not the time specified for ~~the~~ folder E is has arrived (Step S375). In a case of the specified 940 time is arrived (YES), the file stored in the folder E is distributed (Step S376). Next, it is checked whether or not a predetermined time (for example, one hour) elapses from a previous distribution time with regard to the folders A, B (Step S377). If it elapses 945 (YES), the files present in the folders A, B are distributed (Step S378).

It should be noted that it is not always necessary to independently carry out the distribution for each folder. The respective files may be copied 950 to a buffer region, and the files targeted for the distribution may be collectively targeted for the transmission, in accordance with a series of procedures. Thus, for example, the electronic mail and the music data are collectively distributed at the 955 same time. Hence, it is possible to drop the cost necessary for the distribution.

(Second Embodiment)

Fig. 13 shows the schematic configuration of a communication system in a second embodiment of the 960 present invention. The communication system is composed of a portable telephone network 401, base stations 403₁ to 403_N responsible for respective service

areas 402₁ to 402_N—and—an information distribution center 404_L and a position detection center 405 which 965 that are connected to the portable telephone network 401. In this communication system, when a portable telephone 406 serving as a portable information terminal enters into a predetermined particular service area 402, the position detection center 405 970 detects it. Then, in accordance with an actuation attribute "Position" that is not included in the actuation attributes shown in Fig. 7 of the first embodiment, data for the service area 402 is sent to the portable telephone 406. So, a territory guide 975 service is carried out by using a voice or a picture. It should be noted that, it may be designed that the position detection center 405 detects a position, on the basis of a base station that manages the portable telephone 406 or detects the position by using another 980 position detector such as GPS (Global Positioning System).

Fig. 14 shows an example of a setting menu of a territory guide service displayed on a display of a portable telephone, in the second embodiment. A user 985 of the portable telephone 406 shown in Fig. 13 carries out a predetermined operation to display this setting menu on a display 411. This menu is designed suchso that a"Corresponding Territory (service area)"

targeted for a guide and a "Guide Content" can be
990 indicated-selected by using a radio button. For
example, let us suppose that the user of the portable
telephone 406 indicates Sinjuku as "Corresponding
Territory" and indicates a restaurant as "Guide
Content". Then, when the portable telephone 406 of
995 the user enters into the service area 402_N of Sinjuku,
the position detection center 405 sends position
information together with an ID of the portable
telephone 406 to the information distribution center
404. The information distribution center 404 has ~~the~~
1000 a table as shown in Fig. 7 of the first embodiment.
So, it wirelessly transmits data with regard to the
restaurants in Sinjuku to the corresponding portable
telephone 406. The function attribute in this example
may be "Synchronization".

1005 The user of the portable telephone 406 can
receive ~~the~~ similar services in a plurality of
territories (service areas). Thus, if the user
indicates two territories (for example, Sinjuku and
Tokyo) in advance, when the portable telephone 406
1010 enters into a service area 402₁ of Tokyo ~~after that~~,
the user can receive ~~the~~ guide of ~~the~~ desirable shops,
such as restaurants, bookstores and the like, and
tourist spots and the like near Tokyo Station.

(Third Embodiment)

1015 Fig. 15 shows the aschematic configuration of a communication system in a third embodiment of the present invention. This communication system is configured such so that portable telephones 501₁ to 501_N of respective persons have respective dedicated memory regions 504₁ to 504_N in a distribution server 503 on an the Internet 502. That is, the first portable telephone 501₁ has a dedicated first memory region 504₁ in the distribution server 503. Similarly, the N-th portable telephone 501_N has a dedicated N-th memory region 504_N in the distribution server 503. On the Internet 502, for example, there is a camera shop server 506 managed by a camera show or a card print server 507 managed by a card print shop ~~are placed~~.

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1025

Let us suppose that an owner of the first portable telephone 501₁ holds data to make a card in a memory medium 511 and this data is uploaded to the card print server 507. In this case, the owner of the first portable telephone 501₁ wirelessly uploads it to the first memory region 504₁ dedicated to the owner in the distribution server 503, while "Data For Making Card", "Transfer" Data and "Distribution Time" are clearly written. Similarly, let us suppose that an owner of the N-th portable telephone 501_N wants to-a large-sized print of a picture photographed by a digital camera 512 ~~at a large size~~. So, an output

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terminal of the digital camera 512 is connected to the N-th portable telephone 501_N, and its picture data is wirelessly updated to the N-th memory region 504_N dedicated to the owner in the distribution server 503 1045 while "Data For Camera Shop", "Transfer" data and "Distribution Time" are clearly written. A plurality of ~~kinds of~~ data can be stored in the respective dedicated memory regions 504₁ to 504_N, such as "Data For Making Card" and "Data For Camera Shop".

1050 The distribution server 503 periodically scans the memory regions 504₁ to 504_N. If "Transfer" data is stored in any of those regions ~~and this is the~~ ~~"Transfer"~~ data, ~~"Distribution Time"~~ ~~as a condition~~ and ~~a destination of the data are~~ ~~is~~ read out as a 1055 condition and a destination of the data to then distribute to a corresponding server at an indicated time. In a case of "Data For Making Card" stored in the first memory region 504₁, for example, this is distributed to the indicated card print server 507 at 1060 the indicated time. Also, in a case of "Data For Camera Shop", this is distributed to the indicated camera shop server 506 at the indicated time.

As mentioned above, in the third embodiment of the present invention, since the distribution server 1065 503 is installed, it is not required that a plurality of card print servers 507 themselves are placed, even

if there is a time band-frame in which accesses are concentrated on the card print server 507. Moreover, the respective servers, such as the camera shop server 1070 506, and the card print server 507, can commonly use the distribution server 503. Thus, it is possible to attain a—the very effective communication system. Of course, the dedicated memory regions 504₁ to 504_N are not always used only forthe "Transfer" data. The 1075 function attribute may be set asto "Synchronization". For example, when the distribution server 503 obtains data from a certain server and inserts it into the first memory region 504₁, the data may be automatically sent out to the first portable telephone 501₁. Even 1080 in this case, it is naturally possible to select a time band-frame for a distribution and cheaply send data.

As mentioned above, according to the first aspect of the present invention, the distribution 1085 server and client terminal have any number of folders in which at least parts thereof are correlatedcorrespond to each other in the one to one relationship, and the distribution server stores a file read from a content server in the first folder. 1090 For example, if the downloading of a predetermined file is requested by a number of client terminals, and a long time is required in order to transfer the file

to those client terminals, the content server to which
the file is requested stores the file in the first
1095 folder of the distribution server. Then, the
actuation ~~timings~~ time can be suitably set to thereby
disperse the loads in the entire communication system.
Moreover, the file is wirelessly communicated between
the distribution server and client terminals. Thus,
1100 it is also possible to reduce the load on the
telephone line.

Also, according to the first aspect of the
present invention, the loads can be dispersed without
any increase of the facility, by using the
1105 distribution server for the transfer of the file in
the content server or the like, on which the accesses
from the client terminals are ~~transiently~~ temporarily
concentrated.

Moreover, according to the first aspect of the
1110 present invention, the periodical actuation is carried
out as one manner of the actuation of the actuation
timing setting section. Thus, the processes
themselves on the distribution server can be dispersed
by properly setting the periodic interval if the
1115 transfer of the file is not ~~in a great hurry~~ urgent.

According to the first aspect of the present
invention, the actuation timing setting section sets
the time when the actuation is carried out. So, the

technique for using the nighttime in the case of the
1120 file transfer having no emergency can be used to
thereby ~~make lower~~ the communication fee ~~cheaper~~ and
also attain the effective usage of the distribution
server.

According to the first aspect of the present
1125 invention, the actuation timing setting section is
actuated when the new file is stored in the first
folder. Thus, as for the transfer of the ~~emergent~~
urgent file, this enables its request to be executed.
Of course, if the distribution server is responsible
1130 for the distributions of the files from the various
servers and the like, the timings-themselves of the
transfers of the ~~emergent~~urgent files can be
dispersed entirely and temporally. Hence, there is
little fear that the loads are concentrated ~~on the in~~
1135 one particular time.

Also, according to the second aspect of the
present invention, the position is used as the factor
of ~~the file transfer of the file~~. Thus, the necessary
information with the position information as the
1140 trigger can be sent to the movable apparatus such as
the portable telephone and the like. Hence, this is
effective for the guide of ~~the place~~position and the
like.

Moreover, according to the third aspect of the

1145 present invention, if the uploading operations of the files from the mobile terminals are concentrated on the predetermined regions among the several particular memory regions, the distribution server is placed between them. Then, the mobile terminals store the 1150 file in the individual memory region corresponding to each of the mobile terminals within the distribution server. Thus, the concentration of the loads can be avoided. Hence, this has the merit that the mobile terminal can transmit and receive the file without 1155 directly recognizing the location of the particular memory region.

Abstract of the Disclosure

A portable information terminal 201 is connected through a radio base station and the like to ~~an—the~~ Internet—204. Furthermore, a music server—205, a mail server 206 and a distribution ~~servercenter~~ 207 is ~~are~~ 5 connected to the Internet—204. The distribution ~~servercenter~~ 207 distributes data stored in the music server 205 and mail server 206. The distribution ~~servercenter~~ 207 includes a distribution server, a distribution data store memory 209 in which data for 10 the distribution is transiently stored and a radio unit 210 which wirelessly distributes data to the portable information terminal—201. When accesses are concentrated on the music server 205 from the distribution information terminals—201, the music 15 server 205 transfers a file including music data to the distribution ~~servercenter~~ 207. The distribution ~~servercenter~~ 207 wirelessly transfers the file to each of the portable information terminals 201 with temporal dispersion. ~~Thus, Employing above structure,~~ 20 even if the accesses for the communications are ~~transiently temporarily~~ concentrated on the particular apparatuses such as the server, ~~it is possible to obtain employing the above structure allows the communication system which can to~~ avoid the occurrence 25 of ~~the an~~ overload condition.